

a hard stony shell around each seed. This shell protects the seed during the unfavourable period. By the end of rainy season the shell softens and the seed is ready to germinate.

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Palampur, H.P., April, 22, 1972.

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SHORT SCIENTIFIC NOTES

On the Occurrence of Pelagic Tunicates in the South-Eastern Part of the Indian Ocean

During July-August, 1962 the Research Vessel s.s. "Vityaz" traversed the south-eastern part of the Indian Ocean (Table I), under the International Indian Ocean Expedition Programme. The pelagic tunicates recorded by the author are reported here.

Oikopleura longicauda, *Oikopleura fusiformis*, *Oikopleura dioica*, *Thalia democratica*, *Pegea confederata*, *Lasis zonaria*, *Traustedtia multitentaculata*, *Cyclosalpa pinnata*, *Salpa cylindrica*, *Pyrosoma atlanticum*, *Pyrosoma aherniosum*, *Pyrosoma verticillatum*, and *Pyrosoma verticillatum* f. *hybridum* were recorded in the hauls taken between 0 and 1000 m. *Mercalfina hexagona* was recorded from between 0 and 150 m. *Cyclosalpa floridana* was recorded from 0 to 26 m (8 33.5' 105 31.2'). *Cyclosalpa bakeri* was recorded from 75 to 150 m (20 53.0' 113 01.7').

TABLE I
Showing the station locations

Lat.	°S	Long.	°E
8	33.5'	105	31.2'
10	00.0'	105	27.5'
10	00.0'	106	31.2'
11	54.0'	105	19.7'
15	00.0'	106	45.7'
16	0.00'	107	50.5'
17	32.2'	109	12.0'
18	43.1'	110	26.1'
18	48.1'	110	26.1'
20	05.0'	112	06.4'
20	53.0'	113	01.7'
21	41.2'	114	01.0'
21	44.1'	110	50.3'
21	46.2'	108	30.1'
24	31.4'	108	19.3'
26	45.0'	108	18.0'

According to Thompson (1948), *Cyclosalpa bakeri* occurs at deeper levels unlike the other *Cyclosalpa* species. The present record, however, suggests that this *Cyclosalpa* occurs in the near surface waters also. Neumann (1933) stated that Pyrosomida

are holoplanktonic and are found in the upper 200 m and do not occur below 500 m. During the present investigation they were recorded from 0 to 1000 m.

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Waltair,
September 12, 1972.

1. Neumann, G., Quoted from *John Murray Exped.*, 1933-34; *Sci. Rep.*, 1953, 10, 63.
2. Thompson, H., *Handb. Sci. Ind. Res. Org.*, Melbourne, 1948, p. 196.

Induction of Pycnidia by Cellulosic Substrates in Two Light-requiring Fungi*

Among fungi having an absolute requirement of light for spore formation are species of *Ascochyta* and *Phoma*¹. During studies on the effect of light on an isolate of *Ascochyta pisi* (kindly supplied by Prof. Leach) and a species of *Phoma* isolated here the fungi were raised on cellophane discs overlying agar media in Petri dishes. Under these conditions it was observed that both fungi formed pycnidia even in complete darkness, whereas when raised directly on agar media light was required for sporulation. It was surmised that the pycnidial production in darkness could be due to the cellophane probably acting as a substrate and it was decided to test the effect of other cellulosic materials like filter-paper and cellulose powder. Potato dextrose agar (PDA) plates with cellophane or filter-paper discs overlying the agar or with cellulose powder mixed with the medium were inoculated with the isolates of *Ascochyta pisi* and *Phoma* sp. PDA plates with no cellulosic materials were inoculated similarly and served as controls. Plates were incubated in complete darkness or placed under 'black light' fluorescent lamps and exposed to a 12 h light-dark cycle. After 7 days the plates were examined for pycnidial production. The results are presented in Table I.

TABLE I

Fungus		FDA	Cellophane on PDA	Filter-paper on PDA	Cellulose powder in PDA
<i>A. pisi</i>	Dark	..	-	++	+++
	Light	..	++++	++++	++++
<i>Phoma</i> sp.	Dark	..	-	++++	+
	Light	..	+++	++++	+++

- = no pycnidia; + = slight; ++ = moderate; +++ = good; ++++ = fairly heavy; +++++ = very heavy.

It was observed that heavy pycnidial production occurred in light in all the treatments. In darkness it varied in the different treatments. No pycnidia were seen in the controls in darkness. The best results with *Phoma* were on cellophane and with *A. pisi* on filter-paper.

The light replacement value of cellulosic material is interesting but we have no ready explanation to offer. *A. pisi* has been reported to sporulate on a special medium in darkness². A comparison of light-induced and cellulose-induced changes in sporulating mycelia of the two fungi might throw more light on the process of spore-induction.

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September 22, 1972.

* Memoir No. 154 from the Centre for Advanced Study in Botany, University Botany Laboratory, Madras.

1. Leach, C. M., *Canad. J. Bot.*, 1962, 40, 151.
2. —, *Ibid.*, 1965, 43, 185.

Cytology of *Acrotrema*

Acrotrema, Jack is a small genus belonging to the family Dilleniaceae, distributed mostly in the tropics. Hooker¹ has described 10 species in the former British India, most of which being indigenous to Ceylon. In peninsular India the genus is represented by only a single species, *A. arnotti anum*, Wight, the distribution of which is confined to the forests of the Western Ghats^{1,2} in the south Kerala-Tinnevely regions. It is a shadeloving herbaceous undergrowth with short stem and beautiful large radical leaves, thickly clothed with soft hairs.

Chromosome counts were made from pollen mother cells and root, tips, and for this flower buds and root tips were collected from plants growing wild in the Kallar and Ponmudi forests (about 75 Km north-east of Trivandrum), where they grow profusely as undergrowths on wet muddy road-cuttings at altitudes ranging from 500-800 metres. Materials were fixed in Carnoy's fluid, and chromosome preparations were made in aceto-carmine.

Analysis of chromosomes during meiosis was very difficult on account of their small size, poor

stainability at diakinesis, and acute clumping at metaphase I. However, with persistent attempts a few late diakinesis stages with sufficient clarity were obtained, and the number of bivalents in all of them was clearly 28. This has been further confirmed from somatic counts made from root tip cells. At metaphase I, the bivalents appeared as a single clumped mass in all the cells examined. However, anaphase I and subsequent stages of meiosis were regular, and 96% of the pollen appeared fertile.

The present count of $n = 28$ is the first report of chromosome number in the genus *Acrotrema*.

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Trivandrum, August 17, 1972.

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Alternanthera sessilis R. Br.—A New Host of *Phaeotrichoconis crotalariae* (Salam and Rao) Subramonian Comb. Nov.

A leaf spot disease of *Alternanthera sessilis* R. Br. caused by a species of *Phaeotrichoconis* was observed in May, 1972 at the Agricultural College Campus, Vellayani, Kerala. On mature leaves, the infection started as small water-soaked distinct spots which were circular initially, later becoming irregular and varied in size. The centre of the spots became papery white with a light brown margin. Sometimes, the spots coalesced and covered a major portion of the lamina.

Conidiophores emerged through stomata, singly or in groups of 3 to 6. Conidiophores are coloured, short, erect or slightly curved, 4 to 8-septate, the basal cell being slightly swollen and measured $29.70-75.90 \mu \times 3.96-4.95 \mu$. Conidia are elongate, oblong or fusiform, transversely septate with a long beak at the apex. They are borne singly and attached to the conidiophores by the broad ends. Conidia are faintly coloured, 4 to 12 septate,

thick-walled and measured $29.70-122.10 \mu \times 6.60-14.85 \mu$ with an average of $73.65 \times 11.34 \mu$ (excluding the beak). The beak is subhyaline, septate or aseptate, often slightly curved, usually longer than the body of the conidium and measured $19.80-214.50 \mu$ long.

There are two earlier reports of *Phaeotrichoconis crotalariae*. Salam and Rao¹ reported *Trichoconis crotalariae* infecting the leaves and pods of *Crotalaria verrucosa* L. which was later renamed by Subramonian² as *Phaeotrichoconis crotalariae* (Salam and Rao) Subramonian Comb. nov. The other record is on *Marsilea quadrifoliata* L. by Ponnappa³. The organism infecting *A. sessilis* is pathogenic to *M. quadrifoliata* and is comparable to those observed on *C. verrucosa* and *M. quadrifoliata* in the morphological characters and spore size. Hence it has been identified as *P. crotalariae* (Salam and Rao) Subramonian Comb. nov.

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Vellayani.

Kerala. August 18, 1972.

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2. Subramonian, C. V., *Proc. Ind. Acad. Sci.*, 1956, 44B, 1.
3. Ponnappa, K. M., *Curr. Sci.*, 1967, 36, (1) 23.

Occurrence of Abnormal Inflorescences in *Broussonetia papyrifera*

Broussonetia papyrifera Vent. (Moraceae), a native of China and Upper Burma, is now naturalized in many parts of India. It is a dioecious tree. The female flowers are borne in compact, long peduncled heads, and the male flowers form cylindrical stalked spikes. Recently the authors have collected some abnormal inflorescences from the plants growing in Hastinapur (Meerut, U.P.) introduced by the forest department.

The abnormal inflorescences collected from female plants were bilobed or elongated instead of globular. Furthermore, they bore the flowers of both sexes, pistillate in the upper region of the inflorescence and staminate in the lower. The structure of staminate flowers borne on these inflorescences was similar to those on the male inflorescences, i.e., there were four perianth members with four fertile stamens against them.

The male inflorescences were unusual in that the spikes were branched from middle. These branches were very small in comparison to the size of the male inflorescences and measured only about 1 cm in length.

The occurrence of the inflorescences having both pistillate and staminate flowers indicate the possibility that dioecious condition in this species has been derived from monoecious one.

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A Note on the Occurrence of *Hilsa*, *Hilsa ilisha* (Hamilton) in the Netravati Estuary

Investigations made on large and small-scale ascent of the Indian Shad, *Hilsa ilisha* (Hamilton) during monsoon and winter seasons into the major river systems and brackishwater lakes have been reported in detail by previous workers^{3,4}. During a bi-weekly sampling programme of fishes from the Netravati estuary at Mangalore, 12 specimens of *Hilsa ilisha* were collected. Some details of these specimens are given in this note as there are no earlier authentic reports.

The fish encountered ranged in size from 310 to 394 mm T.L., weighed 350 to 750 g and were captured in gill nets during April-June, 1972. Examination of the gonad condition indicated that the fish were in the first stage of maturity. According to the local fishermen, stray specimens of *Hilsa*, locally called 'mallas', ascend the estuaries every year only during the summer months and are captured more commonly in the Netravati estuary about 2 km upstream of the river mouth, than in the connected Gurpur estuary, either by gill nets or cast nets during night fishing. Stray specimens of *Hilsa* are also occasionally caught from the coastal waters of this region. The present record bridges the gap in the distribution of *Hilsa* between the Narmada in the north and Vembanad backwaters in the south, along the west coast of India. Further, the time of ascent of the fish up the Netravati estuary is also somewhat similar to that in the Narmada¹ and the Vembanad backwaters².

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Mangalore-1, August 28, 1972.

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